

Attorney Docket No. 3552 P 002
Title: A&M FOR DETECTING ABNORMALITIES
IN BODILY MATTER

Page 2

33. The method according to Claim 29, wherein the data processing means correlates detected electrical impedance properties selected from the group consisting of $Z_{i_{com}}$, $Z_{x_{com}}$ to $Z_{i_{com}}$ ratio, $Z_{x_{com}}$, $Z_{m_{com}}$, $C_{m_{com}}$, $Z_{x_{com}} / Z_{m_{com}}$, $Z_{x_{com}} / C_{m_{com}}$, and $Z_{m_{com}}$, $Z_{i_{com}}$.

34. The method according to Claim 29, wherein the data processing means correlates changes and/or large variations of intracellular impedance $Z_{i_{com}}$ with the presence of dyskaryosis.

35. The method according to Claim 29, wherein the data processing means correlates abnormal $Z_{i_{com}}$, $Z_{x_{com}}$ to $Z_{i_{com}}$ ratio with abnormal nuclear-to-cytoplasmic ratio (NCR).

36. The method according to Claim 29, wherein the data processing means correlates abnormal $Z_{x_{com}}$ with abnormal inter-cellular cohesion.

37. The method according to Claim 29, wherein the data processing means correlates abnormal $Z_{m_{com}}$, $C_{m_{com}}$, $Z_{x_{com}} / Z_{m_{com}}$, $Z_{m_{com}} / C_{m_{com}}$, $Z_{m_{com}}$ $Z_{i_{com}}$ with abnormal membrane morphology.

38. The method according to Claim 29, wherein the data processing means correlates detected impedance properties selected from the group consisting of:

- i) $Z_{i_{com}}$;
- ii) $Z_{x_{com}}$;
- iii) $Z_{m_{com}}$, $C_{m_{com}}$; and,
- iv) ratio $Z_{x_{com}} / Z_{i_{com}}$; $Z_{x_{com}} / Z_{m_{com}}$; $Z_{x_{com}} / C_{m_{com}}$;

with the presence of non-infiltrate, early-infiltrate or infiltrate stage cancer.

39. The method of Claim 29, wherein the data processing means references the detected electrical impedance properties of the bodily matter to the detected electrical impedance of other bodily matter.

40. The method according to Claim 37, being adapted to detect a breast carcinoma, wherein the detected impedance properties are of breast tissue and are referenced to detected electrical impedance properties of fatty tissue in the breast.

41. The method according to Claim 29, wherein the data processing means is adapted to compare the detected electrical impedance properties with a database of impedance properties corresponding to bodily matter of known composition.

42. The method of Claim 29, adapted to detect a carcinoma.

43. The method according to Claim 29, adapted to detect a breast carcinoma.

Attorney Docket No. 3552 P 002
Title: A&M FOR DETECTING ABNORMALITIES
IN BODILY MATTER

Page 3

44. The method according to Claim 29, adapted to detect at least one of the group consisting of Stage 3, Stage 2 and Stage 1 carcinomas.

45. The method according to Claim 29, wherein the electrode arrangement is disposed in a woman's brassiere.

46. An electrical tomographic method for detecting abnormalities in bodily matter comprising the steps of:
generating electrical signals at a frequency greater than 1MHz;
applying the electrical signals to the bodily matter using an electrode arrangement;
detecting electrical impedance properties of the bodily matter; and,
correlating the detected electrical impedance properties with the presence or absence of abnormalities in the bodily matter using a fractal model of tissue impedance as shown in Figures 3 and 4.

47. An electrical impedance tomography apparatus adapted to detect abnormalities in bodily matter comprising:
an electrical signal generating means for generating electrical signals at a plurality of frequencies;
an electrode arrangement for applying the electrical signals to the bodily matter and detecting electrical impedance properties of the bodily matter; and,
a data processing means for correlating the detected electrical impedance properties with the presence or absence of abnormalities in the bodily matter using a fractal model of tissue impedance.

48. The apparatus of claim 47 wherein the electrical signals applied to the bodily matter have a frequency greater than 1 MHZ.

49. The apparatus of claim 47 wherein the electrical signals applied to the bodily matter have a frequency greater than 4 MHZ.

50. An electrical impedance tomography apparatus adapted to detect carcinomas in bodily matter comprising:
an electrical signal generating means for generating electrical signals at a frequency greater than 1 MHZ;
an electrode arrangement for applying the electrical signals to the bodily matter and detecting electrical impedance properties of the bodily matter; and,

Attorney Docket No. 3552 P 002
Title: A&M FOR DETECTING ABNORMALITIES
IN BODILY MATTER

Page 4

a data processing means for correlating the detected electrical impedance properties with the presence or absence of carcinomas in the bodily matter using a fractal model of tissue impedance as shown in Figures 3 and 4.